Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER 2012

Subject code: 714006N **Date: 10-01-2013**

Subject Name: Cleaner Production in Rubber Industries

Time: 02.30 pm – 05.00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q. 1		Discuss in detail cleaner production methodology by keeping one industry as reference.	**14**
Q. 2	**(a)**	Explain implementation of energy conversation with an industrial example.	**07**
Q. 2	**(b)**	Explain difference between cleaner production and end of pipe treatment with suitable example.	**07**
		OR	
Q. 2	**(b)**	Discuss cleaner production in vinyl chloride plant.	**07**
Q. 3	**(a)**	Discuss in detail about the stages of natural rubber processing where we can identify the potential of cleaner production.	**08**
Q. 3	**(b)**	Answer the following	
	i	Categorize the area of waste generation in rubber industries.	**03**
	ii	Explain the term CT-code of practice. What does the scope of CT-code of practice cover for rubber?	**03**
		OR	
Q. 3	**(a)**	With the flow diagram, explain the primary and secondary waste water treatment which is obtained from rubber processing sector.	**07**
Q. 3	**(b)**	Answer the following	
	i	Explain the pre cleaning operation of rubber scraps to produce block rubber.	**05**
	ii	Define the following terms: (i) CT-criterion (ii) CT-options	**02**
Q. 4	**(a)**	How the block rubber factories with lower rubber loss differ from those of higher rubber loss?	**07**
Q. 4	**(b)**	Answer the following	
	i	Explain the environmental problems arising from concentrated latex industries.	**05**
	ii	Which factors are to be covered in establishing the CT-code?	**02**
		OR	
Q. 4	**(a)**	How the block rubber factories with low fuel consumption differ from those with higher fuel consumption?	**07**

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Q. 4	**(b)**	Discuss in detail about the rubber smoke sheet processing with its block diagram.	**07**
Q. 5	**(a)**	With advantages and disadvantages of pond system, discuss in detail classification of ponds used to treat the rubber waster water.	**07**
Q. 5	**(b)**	Answer the following	
	i	Draw labeled diagram of electrolytic reactor used to treat latex waste water.	**05**
	ii	Explain the term sludge retention time.	**02**

OR

Q. 5	**(a)**	What do you mean by aerobic waste water treatment? How waste water is treated in sequencing batch reactor?	**07**
Q. 5	**(b)**	Answer the following	
	i	Explain the construction and working of upflow anaerobic sludge blanket reactor.	**05**
	ii	Write a brief note on acid formers.	**02**

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